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spectrum of Class R, but as observed with slit spectrographs the two types of spectrum show little correspondence either as to the bands or the lines, so that it would seem unwise to classify the group under discussion as a subdivision of Class R. In the new *Henry Draper Catalogue* they are called peculiar.

At the time of maximum light the spectrum of a star of this group¹ is very different from that of Class Md, the two types of spectra having few features in common in the region of wave-length greater than that of H γ . The characteristic light curves of the two types of stars, on the other hand, seem to be quite similar; at least the classifications which have been made on the basis of the light curves have not shown much correlation with the type of spectrum. From this it might be inferred that the general cause of the light variations is essentially the same in both cases, with the possibility that the differences in spectrum are due to differences in certain conditions which are not of great importance in controlling the amount of light radiated, or perhaps to differences in chemical composition.

This view receives some support from recent spectrograms of R *Cygni* taken during decreasing light, which show in addition to the bright hydrogen lines several other bright lines including $\lambda\lambda 4202, 4308, 4512, 4571$, all of which have been observed in Md spectra. The meager material so far secured indicates that the behavior of these lines in R *Cygni* is similar to that found to be characteristic of Class Md². If this be correct the problem of the relationship of these lines to the cause of long-period variability becomes of increased generality and interest.

PAUL W. MERRILL.

TWO NEW VARIABLE STARS IN THE TRIFID NEBULA

Comparison of a photograph of the Trifid nebula, made with the 60-inch reflector 1921, June 4, with two similar photographs made by Mr. Ritchey 1910, June 3 and June 4-5 has yielded two new variable stars in the following positions:

No. 1, 380" north and 155" west of the nucleus,
No. 2, 15" south and 130" west of the nucleus.

Mr. Ritchey's plates were exposed 3^h and 3^h26^m respectively, and mine 4^h10^m; but the densities are nearly the same, due probably to

¹At the August meeting slides of several spectra were shown. Good illustrations of the spectrum of R *Cygni* shortly after maximum, copied from negatives by Wright, are found in *Monthly Notices*, **72**, 548, 1912.

²Contrib. from Mt. Wilson Obs., No. 200; *Ap. Jour.*, **53**, 185, 1921.

the fact that my plate was made with an old silver surface on the mirror. The stars are estimated to be of about the 17th magnitude on both of Mr. Ritchey's plates. On mine, No. 1 is about a magnitude fainter, and No. 2 is quite invisible. On a plate exposed $2^{\text{h}}30^{\text{m}}$ with the Hooker telescope 1921 June 30, No. 1 is about half a magnitude fainter than on the 1910 plates, and No. 2 is still invisible. No evidence was found that any change had taken place in the nebula itself during the 11-year interval.

JOHN C. DUNCAN.

July 12, 1921.

THE GREAT SUN-SPOT OF MAY, 1921*

(Abstract)

This spot, which was associated with brilliant auroras and intense terrestrial magnetic disturbances, showed some remarkable peculiarities. Chief among these were the mixed magnetic polarities of the two larger members of the group. The bearing of these phenomena on the nature of sun-spots is briefly discussed in the paper.

GEORGE E. HALE AND S. B. NICHOLSON.

ON THE ABSENCE OF SELECTIVE ABSORPTION IN THE ATMOSPHERE
OF VENUS*

(Abstract)

The spectrum of *Venus*, with a scale of 3 Å per mm, has been compared with the solar spectrum from $\lambda 3900$ to $\lambda 6900$. No lines due to the atmosphere of *Venus* were observed. These observations were made when the relative velocity of the Earth and *Venus* was such that lines originating in the atmosphere of *Venus* should have been completely separated from those due to the Earth's atmosphere, the displacement being about 0.25 Å. Solar lines of Rowland intensity oo and ooo are present in the spectrograms, but there is no trace of water vapor lines or of oxygen lines in the a and B groups, $\lambda 6300$ and $\lambda 6800$, originating in the atmosphere of *Venus*. The measured wave lengths of the water vapor and oxygen lines present are the same as for the terrestrial atmospheric lines. As far as our observations go, the solar lines are unmodified and no lines due to water vapor or oxygen are produced by the double passage